UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/694,144	10/27/2003	Stephen J. Estrop	MS1-1679US	3277

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EXAMINER
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ART UNIT	PAPER NUMBER
2676	

DATE MAILED: 01/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	10/694,144	ESTROP, STEPHEN J.
	Examiner	Art Unit
	Joni Hsu	2676

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-27* is/are pending in the application.

     4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

     a)☐ All   b)☐ Some * c)☐ None of:

       1.☐ Certified copies of the priority documents have been received.

       2.☐ Certified copies of the priority documents have been received in Application No. _____.

       3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

     * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
     Paper No(s)/Mail Date *2/4/04*.

4) ☐ Interview Summary (PTO-413)
     Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2.   Claim 25 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

   Claim 25 recites the limitations "the data processing module" and "the instructions". There is insufficient antecedent basis for these limitations in the claim. Applicant is assumed to have meant "the graphics processing module" instead of "the data processing module".

Claim Rejections - 35 USC § 103

3.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4.   The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459

(1966), that are applied for establishing a background for determining obviousness under 35

U.S.C. 103(a) are summarized as follows:

1.   Determining the scope and contents of the prior art.
2.   Ascertaining the differences between the prior art and the claims at issue.
3.   Resolving the level of ordinary skill in the pertinent art.
4.   Considering objective evidence present in the application indicating obviousness
        or nonobviousness.

5.   Claims 1-9, 11-22, and 25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Salmonsen (US 20040054689A1) in view of Herrara (US006208350B1).

6.   With regard to Claim 1, Salmonsen describes a method for processing video data,

comprising receiving a principal video stream from a source [0104]; receiving a video sub-

stream containing supplemental information associated with the principal video stream [0137];

performing an operation on the principal video stream [0104] and combining the principal video

stream with the video sub-stream to produce processed data; and outputting the processed data

[0181].

It would have been obvious to one of ordinary skill in this art at the time of invention by

However, Salmonsen does not teach that the performing and the combining are

performed in a single stage operation. However, Herrara describes performing an operation on

the principal video stream and combining the principal video stream with the video sub-stream to

produce processed data. Herrara also describes that the performing and the combining are

performed in a single stage operation (14, Figure 1; Col. 2, line 39-Col. 3, line 19).

It would have been obvious to one of ordinary skill in this art at the time of invention by

applicant to modify the device of Salmonsen so that the performing and the combining are

performed in a single stage operation as suggested by Herrara because performing a single stage

operation instead of multiple stage operations inherently makes the processing faster.

7.   With regard to Claim 2, Salmonsen describes that the performing of the operation

comprises de-interlacing the principal video stream [0104].

8.   With regard to Claim 3, Salmonsen describes that the performing of the operation

comprises resizing the principal video stream [0104].

9.   With regard to Claim 4, Salmonsen does not teach that the performing and the combining

involve a single call to memory. However, Herrara describes that the performing and the

combining are performed in a single stage operation, and the operation is performed on the

inputted DVD data stream (14, Figure 1; Col. 2, line 39-Col. 3, line 19). The inputted DVD data

stream was inherently retrieved by a single call to memory.

        It would have been obvious to one of ordinary skill in this art at the time of invention by

applicant to modify the device of Salmonsen so that the performing and the combining involve a

single call to memory as suggested by Herrara because performing a single call to memory

instead of multiple calls to memory inherently makes the processing faster.

10.   With regard to Claim 5, Salmonsen does not teach that the performing and the combining

are performed in a YUV color space. However, Herrara describes that the performing and the

combining are performed in a YUV color space (Col. 2, line 51-Col. 3, line 19).

It would have been obvious to one of ordinary skill in this art at the time of invention by

applicant to modify the device of Salmonsen so that the performing and the combining are

performed in a YUV color space as suggested by Herrara. Using a YUV color space is well-

known in the art and widely used. Some advantages of using a YUV color space are that they

remain compatible with black and white analog television, and the signal YUV can be easily

manipulated to deliberately discard some information in order to reduce bandwidth. YUV is a

versatile format which can easily be combined into other legacy video formats. Combining or

modulating can be accomplished easily in low-cost circuitry. The advantages of using a YUV

color space can be found in many publications, such as the Wikipedia free encyclopedia.

11.   With regard to Claim 6, Salmonsen describes a step of forwarding instructions to a

graphics processing module, the instructions informing the graphics processing module how to

execute the performing and the combining (Figure 2) [0033, 0104, 0181].

12.   With regard to Claim 7, Salmonsen does not teach that the instructions identify a location

at which to receive the principal video stream, a location at which to receive the video sub-

stream, and a location at which to provide the processed data. However, Herrara describes that

the instructions identify a location at which to receive the principal video stream, a location at

which to receive the video sub-stream, and a location at which to provide the processed data

(Figure 7; Col. 13, lines 4-20; Col. 6, lines 12-20; Col. 15, lines 64-67).

It would have been obvious to one of ordinary skill in this art at the time of invention by

applicant to modify the device of Salmonsen so that the instructions identify a location at which

to receive the principal video stream, a location at which to receive the video sub-stream, and a

location at which to provide the processed data as suggested by Herrara because Herrara suggests

that the locations must be identified in the instructions so that the data will be sent to the correct

destination (Figure 7; Col. 13, lines 4-20; Col. 6, lines 12-20; Col. 15, lines 64-67).

13.   With regard to Claim 8, Salmonsen does not teach that the instructions identify a

rectangle of data from which to receive the principal video stream within a video stream surface,

a rectangle of data from which to receive the video sub-stream within a video sub-stream surface,

and a rectangle at which to output the processed data within a destination surface. However,

Herrara describes that the pictures are broken into rectangles and these rectangles are mapped to

the destination picture (Col. 16, lines 19-27). Therefore, the instructions must inherently identify

a rectangle of data from which to receive the principal video stream within a video stream

surface, a rectangle of data from which to receive the video sub-stream within a video sub-stream

surface, and a rectangle at which to output the processed data within a destination surface.

It would have been obvious to one of ordinary skill in this art at the time of invention by

applicant to modify the device of Salmonsen so that the instructions identify a rectangle of data

from which to receive the principal video stream within a video stream surface, a rectangle of

data from which to receive the video sub-stream within a video sub-stream surface, and a

rectangle at which to output the processed data within a destination surface as suggested by

Herrara because Herrara suggests that breaking the pictures into rectangles of data makes it

easier to transfer the data (Col. 15, line 64-Col. 16, line 27), and the instructions must identify

the rectangles of data from which to receive the data so that the data will be sent to the correct

destination.

14.   With regard to Claim 9, Salmonsen describes that the video sub-stream includes close

captioned information [0137, 0181].

15.   With regard to Claim 11, Salmonsen describes an apparatus for processing video data,

comprising a renderer module (514, Figure 5) [0098]; a data processing module (214, Figure 2);

and an interface module (210) that couples the renderer module to the data processing module

[0033], wherein the renderer module includes logic configured to generate and provide

instructions to the data processing module to execute at least the following functions: a)

performing an operation on a received principal video stream [0104]; and b) combining the

received principal video stream with a video sub-stream [0181].

        However, Salmonsen does not teach that the performing and the combining are

performed in a single stage. However, Herrara describes the performing and the combining are

performed in a single stage (14, Figure 1; Col. 2, line 39-Col. 3, line 19), as discussed in the

rejection for Claim 1.

16.   With regard to Claim 12, Claim 12 is similar in scope to Claim 2, and therefore is

rejected under the same rationale.

17.   With regard to Claim 13, Claim 13 is similar in scope to Claim 3, and therefore is rejected under the same rationale.

18.   With regard to Claim 14, Claim 14 is similar in scope to Claim 4, and therefore is rejected under the same rationale.

19.   With regard to Claim 15, Claim 15 is similar in scope to Claim 5, and therefore is rejected under the same rationale.

20.   With regard to Claim 16, Claim 16 is similar in scope to Claim 6, and therefore is rejected under the same rationale.

21.   With regard to Claim 17, Claim 17 is similar in scope to Claim 7, and therefore is rejected under the same rationale.

22.   With regard to Claim 18, Claim 18 is similar in scope to Claim 8, and therefore is rejected under the same rationale.

23.   With regard to Claim 19, Claim 19 is similar in scope to Claim 9, and therefore is rejected under the same rationale.

24.   With regard to Claim 20, Claim 20 is similar in scope to Claim 10, and therefore is

rejected under the same rationale.

25.   With regard to Claim 21, Salmonsen does not teach that the data processing module

comprises a graphics processing module. However, Herrara describes that the data processing

module comprises a graphics processing module (92, Figure 4; Col. 10, lines 59-67).

     It would have been obvious to one of ordinary skill in this art at the time of invention by

applicant to modify the device of Salmonsen so that the data processing module comprises a

graphics processing module as suggested by Herrara. Graphics processing units (GPU) are well-

known in the art and are widely used. GPUs have the advantage of offloading computationally

intensive transfer and lighting calculations from the CPU to the GPU, allowing faster graphics

processing speeds. This means all scenes increase in detail and complexity without sacrificing

performance. The advantages of GPUs can be found in many publications, such as Nvidia's

website.

26.   With regard to Claim 22, Salmonsen does not teach that the graphics processing module

is configured to execute video processing tasks using a graphics pipeline. However, Herrara

describes that the graphics processing module (92, Figure 4) is configured to execute video

processing tasks using a graphics pipeline (200, Figure 5; Col. 11, lines 18-36).

     It would have been obvious to one of ordinary skill in this art at the time of invention by

applicant to modify the device of Salmonsen so that the graphics processing module is

configured to execute video processing tasks using a graphics pipeline as suggested by Herrara.

Graphics pipelines are well-known in the art and are commonly implemented in graphics

hardware to get interactive speeds. Graphics pipelines are discussed in many publications, such

as Mann's website.

27.   With regard to Claim 25, Salmonsen describes an apparatus for processing video data,

comprising a memory (216, Figure 2); a computer processing module for controlling the

apparatus, the computer processing module being coupled to the memory [0042]; a renderer

module (514, Figure 5) [0098]; a data processing module (214, Figure 2) coupled to the same

memory as the computer processing module; and an interface module (210) that couples the

renderer module to the data processing module [0033], wherein the renderer module includes

logic configured to generate and provide instructions to the data processing module to execute at

least the following functions: a) performing an operation on a received principal video stream

[0104]; and b) combining the received principal video stream with a video sub-stream [0181],

wherein the data processing module includes logic configured to receive the instructions, and in

response thereto, execute the performing and the combining [0033].

However, Salmonsen does not teach that the data processing module comprises a

graphics module and that the performing and the combining are performed in a single stage.

However, Herrara describes that the data processing module comprises a graphics module, as

discussed in the rejection for Claim 21 and that the performing and the combining are performed

in a single stage, as discussed in the rejection for Claim 1.

28.   With regard to Claim 26, Claim 26 is similar in scope to Claim 1, and therefore is rejected under the same rationale.

29.   With regard to Claim 27, Claim 27 is similar in scope to Claim 1, and therefore is rejected under the same rationale.

30.   Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Salmonsen (US 20040054689A1) in view of Herrara (US006208350B1), further in view of MacInnis (US006573905B1).

Salmonsen and Herrara are relied upon for the teachings as discussed above relative to Claim 1.

However, Salmonsen and Herrara do not teach that the performing and the combining are performed on an apparatus that uses a Uniform Memory Architecture (UMA) design. However, MacInnis describes performing an operation on the principal video stream (Col. 63, lines 40-51) and combining the principal video stream with the video sub-stream, which includes close captioned information (Col. 83, lines 1-5), to produce processed data in a YUV color space (Col. 5, lines 64-67; Col. 7, lines 3-10), and outputting the processed data. MacInnis also describes that the performing and the combining are performed on an apparatus that uses a Uniform Memory Architecture (UMA) design (Col. 64, lines 14-27).

It would have been obvious to one of ordinary skill in this art at the time of invention by applicant to modify the devices of Salmonsen and Herrara so that the performing and the combining are performed on an apparatus that uses a Uniform Memory Architecture (UMA)

design as suggested by MacInnis because MacInnis suggests the advantage of facilitating

substantial cost savings at the system level by allowing the CPU and other functions to utilize

this memory at the same time that the memory is being used for graphics functions and display

(Col. 64, lines 21-27).

31.   Claims 23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Salmonsen (US 20040054689A1) in view of Herrara (US006208350B1), further in view of

Watson (US006466226B1).

32.   With regard to Claim 23, Salmonsen and Herrara are relied upon for the teachings as

discussed above relative to Claim 11.

        However, Salmonsen and Herrara do not teach that the data processing module includes

multiple texturing units, wherein a first texturing unit is allocated to a component of the received

video stream, and a second texturing unit is allocated to the received video sub-stream.

However, Watson describes that the data processing module includes multiple texturing units,

wherein a first texturing unit (213, Figure 3) is allocated to a component of the received video

stream, and a second texturing unit (215) is allocated to the received video sub-stream (Col. 6,

line 66-Col. 7, line 15).

        It would have been obvious to one of ordinary skill in this art at the time of invention by

applicant to modify the devices of Salmonsen and Herrara so that the data processing module

includes multiple texturing units, wherein a first texturing unit is allocated to a component of the

received video stream, and a second texturing unit is allocated to the received video sub-stream

as suggested by Watson because Watson suggests the advantage of being able to process the

texturing for the video stream and the texturing for the video sub-stream at the same time if

needed (Col. 6, line 66-Col. 7, line 15).

33.   With regard to Claim 24, Salmonsen and Herrara do not teach that the data processing

module is configured to execute the performing and the combining in a single stage by

processing video data obtained from the first and second texturing units substantially in parallel.

However, Watson describes that the first and second texturing units can be processed at the same

time or substantially in parallel (Col. 6, line 66-Col. 7, line 15).

It would have been obvious to one of ordinary skill in this art at the time of invention by

applicant to modify the devices of Salmonsen and Herrara so that the data processing module is

configured to execute the performing and the combining in a single stage by processing video

data obtained from the first and second texturing units substantially in parallel as suggested by

Watson. Parallel processing is well-known in the art and widely used. Parallel processing

allows two processors to operate simultaneously to speed processing. This can be found in many

publications, such as the definitions of parallel processing found by Google.

Prior Art of Record

"YUV," available at *http://en.wikipedia.org/wiki/YUV*.

"GPU: Changes Everything," available at *http://www.nvidia.com/object/gpu.html*.

Stephen Mann, "The Graphics Rendering Pipeline," 1997, available at

http://medialab.di.unipi.it/web/IUM/Waterloo/node7.html.

"Parallel Processing," available at

<http://www.google.com/search?hl=en&lr=&oi=defmore&q=define:parallel+processing>.

Conclusion

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Joni Hsu whose telephone number is 703-305-4418. The

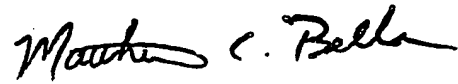examiner can normally be reached on M-F 8am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Matthew C. Bella can be reached on 703-308-6829. The fax phone number for the

organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JH

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